

FORM 1 (cDNA sequence provided):

```
1 ATGGACAGAG TTTATGAAAT TCCTGAGGAG CCAAATGTGG ATCCGGTTTC
51 ATCTCTGGAG GAAGATGTCA TCCGTGGAGC CAACCCCGA TTTACTTTTC
101 CAATTAGCAT CCTTTTCTCC ACCTTTTGT ACTGTGGGA GGCTGCATCT
151 GCTTTGTACA TGGTTAGAAT CTATCGAAAG AATAGTAAA CTTACCGGAT
201 GACATACACC TTTTCTTTCT TTATGTTTTC ATCCATTATG GTCCAGTTGA
251 CCCTCATTTT TGTCCACAGA GATCTAGCCA AAGATAAACC GCTATCATT
301 TTTATGCATC TAATCCTCTT GGGACCTGTT ATCAGATGTT TGGAGGCCAT
351 GATTAAGTAC CTCACACTGT GGAAGAAAGA GGAGCAGGAG GAGCCCTATG
401 TCAGCCTCAC CCGAAAGAAG ATGCTAATAG ATGGCGAGGA GGTGCTGATA
451 GAATGGGAGG TGGGCCACTC CATCCGGACC CTGGCTATGC ACCGCAATGC
501 CTACAAACGT ATGTCACAGA TCCAAGCCTT CCTGGGCTCA GTGCCCCAGC
551 TGACCTATCA GCTCTATGTG AGCCTGATCT CTGCAGAGGT TCCCCTGGGT
601 AGAGTTGTGC TAATGGTATT TTCCCTGGTA TCTGTCACCT ATGGGGCCAC
651 CCTTTGCAAT ATGTTGGCTA TCCAGATCAA GTACGATGAC TACAAGATTC
701 GCCTTGGGCC ACTAGAAGTC CTCTGCATCA CCATCTGGCG GACATTGGAG
751 ATCACTTCCC GCCTCCTGAT TCTGGTGCTC TTCTCAGCCA CTTTGAAATT
801 GAAGGCTGTG CCTTTCCTAG TGCTCAACTT CCTGATCATC CTCTTTGAGC
851 CCTGGATTAA GTTCTGGAGA AGTGGTGCCC AGATGCCCAA TAACATTGAG
901 AAAAAGTTCA GCCGGGTCGG CACTCTGGTG GTCCTGATTT CAGTCACCAT
951 CCTCTATGCT GGCATCAACT TCTCTTGCTG GTCAGCTTTG CAGTTGAGGT
1001 TGGCAGACAG AGATCTCGTC GACAAAGGGC AGAACTGGGG ACATATGGGC
1051 CTGCACTATA GTGTGAGGTT GGTAGAGAAT GTGATCATGG TCTTGGTTTT
1101 TAAGTTCTTT GGAGTGAAAG TGTACTGAA TTAAGTGCAT TCCTTGATTG
1151 CCTTGCAGCT CATTATTGCT TATCTGATTT CCATTGACTT CATGCTCCTT
1201 TTCTTCCAGT ACTTGCATCC ATTGCGCTCA CTCTTCACCC ATAATGTAGT
1251 AGACTACCTC CATTGTGTCT GCTGTCACCA GCACCCTCGG ACCAGGGTTG
1301 AGAACTCAGA GCCACCCTTT GAGACTGAAG CAAGGCAAAG TGTTGTCTGA
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FEATURES:

Start Codon: 1
Stop Codon: 1348
3'UTR: 1351

FORM 2 (transcript sequence provided):

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1 ATGAACACAA GACCACAACA TTCAGAAAGA ACCTCGACAA TGGACAGAGT
51 TTATGAAATT CCTGAGGAGC CAAATGTGGA TCCGGTTTCA TCTCTGGAGG
101 AAGATGTCAT CCGTGGAGCC AACCCCGGAT TTACTTTTCC ATTTAGCATC
151 CTTTTCTCCA CCTTTTGTGA CTGTGGGGAG GCTGCATCTG CTTTGTACAT
201 GGTTAGAATC TATCGAAAGA ATAGTGAAAC TTACTGGATG ACATACACCT
251 TTTCTTTCTT TATGTTTTCA TCCATTATGG TCCAGTTGAC CCTCATTTTT
301 GTCCACAGAG ATCTAGCCAA AGATAAACCG CTATCATTAT TTATGCATCT
351 AATCCTCTTG GGACCTGTTA TCAGATGTTT GGAGGCCATG ATTAAGTACC
401 TCACACTGTG GAAGAAAGAG GAGCAGGAGG AGCCCTATGT CAGCCTCACC
451 CGAAAGAAGA TGCTAATAGA TGGCGAGGAG GTGCTGATAG AATGGGAGGT
501 GGGCCACTCC ATCCGGACCC TGGCTATGCA CCGCAATGCC TACAAACGTA
551 TGTACAGAT CCAAGCCTTC CTGGGCTCAG TGCCCCAGCT GACCTATCAG
601 CTCTATGTGA GCCTGATCTC TGCAGAGGTT CCCCTGGGTA GAGTTGTGCT
651 AATGGTATTT TCCCTGGTAT CTGTCACCTA TGGGGCCACC CTTTGAATA
701 TGTTGGCTAT CCAGATCAAG TACGATGACT ACAAGATTCG CCTTGGGCCA
751 CTAGAAGTCC TCTGCATCAC CATCTGGCGG ACATTGGAGA TCACTTCCCG
801 CCTCTGATT CTGGTGCTCT TCTCAGCCAC TTTGAAATTG AAGGCTGTGC
851 CCTTCCTAGT GCTCAACTTC CTGATCATCC TCTTTGAGCC CTGGATTAAG
901 TTCTGGAGAA GTGGTGCCCA GATGCCCAAT AACATTGAGA AAAACTTCAG
951 CCGGGTCCGG ACTCTGGTGG TCCTGATTTT AGTCACCATC CTCTATGCTG
1001 GCATCAACTT CTCTTGCTGG TCAGCTTTGC AGTTGAGGTT GGCAGACAGA
1051 GATCTCGTCG ACAAGGGGCA GAACTGGGGA CATATGGGCC TGCATATAG
1101 TGTGAGGTTG GTAGAGAATG TGATCATGGT CTTGGTTTTT AAGTTCTTTG
1151 GAGTGAAAGT GTTACTGAAT TACTGTCATT CCTTGATTGC CTTGCAGCTC
1201 ATTATTGCTT ATCTGATTTT CATTGGCTTC ATGCTCCTTT TCTTCCAGTA
1251 CTTGCATCCA TTGCGCTCAC TCTTCACCCA TAATGTAGTA GACTACCTCC
1301 ATTGTGTCTG CTGTCACCAG CACCCTCGGA CCAGGGTTGA GAACTCAGAG
1351 CCACCCTTTG AGACTGAAGC AAGGCAAAGT GTTGTCTGA
```

HOMOLOGOUS PROTEINS:

Top BLAST Hits:

	Score	E
gi 6502963 gb AAF14527.1 AF155511_1 (AF155511) KX antigen [Mus ...	366	e-100
gi 10835267 ref NP_066569.1 Kell blood group precursor (McLeod...	361	1e-98
gi 2135606 pir I39294 McLeod syndrome-associated protein XK - ...	358	8e-98
gi 3183551 sp P51811 XK_HUMAN MEMBRANE TRANSPORT PROTEIN XK (KX...	358	1e-97
gi 4759330 ref NP_004668.1 Testis-specific XK-related protein ...	76	8e-13

BLAST to dbEST:

	Score	E
gi 1891549 /dataset=dbest /taxon=9606 ...	383	e-104

EXPRESSION INFORMATION FOR MODULATORY USE:

library source:

Expression information from BLAST dbEST hits:

gi|1891549 Germinal center B cells

Expression information from PCR-based tissue screening panels:

Mixed tissue

FORM 1:

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1 MDRVYEIPEE PNVDPVSSLE EDVIRGANPR FTFPFSILFS TFLYCGEAAS
51 ALYMVRIYRK NSETYRMTYT FSFFMFSSIM VQLTLIFVHR DLAKDKPLSL
101 FMHLILLGPV IRCLEAMIKY LTLWKKEEQE EPYVSLTRKK MLIDGEEVLI
151 EWEVGHSIRT LAMHRNAYKR MSQIQAFGLS VPQLTYQLYV SLISAEVPLG
201 RVVLMVFSLV SVTYGATLCN MLAIQIKYDD YKIRLGPLEV LCITIWRLE
251 ITSRLILVL FSATLKLKAV PFLVLNFLII LFEPWIKFWR SGAQMPNNIE
301 KNFSRVGTLV VLISVTILYA GINFSCWSAL QLRLADRD LV DKGQNWGHMG
351 LHYSVRLVEN VIMVLVFKFF GVKVLLNYCH SLIALQLIIA YLISIDFMLL
401 FFQYLHPLRS LFTHNVDYL HVCVCHQHR TRVENSEPPF ETEARQSVV
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FORM 2:

```
1 MNTRPQHSE R TSTMDRVYEI PEEPNDVPS SLEEDVIRGA NPRFTFPFSI
51 LFSTFLYCGE AASALYMVRI YRKNSETYWM TYTFSFFMFS SIMVQLTLIF
101 VHRDLAKDKP LSLFMHLILL GPVIRCLEAM IKYLT LWKKE EQEEPVS LT
151 RKKMLIDGEE VLIEWEVGHS IRTLAMHRNA YKRMSQIQAF LGSVPQLTYQ
201 LYVSLISAEV PLGRVVLMVF SLVSVTYGAT LCNMLAIQIK YDDYKIRLGP
251 LEVLCITIWR TLEITSRLLI LVLF SATLKL KAVPFLVLNF LIILFEPWIK
301 FWRSGAQMPN NIEKNFSRVG TLVV LISVTI LYAGINFSCW SALQLRLADR
351 DLVDKGQNWG HMGLHYSVRL VENVIMVLVF KFFGVKVLN YCHSLIALQL
401 IIAYLISIGF MLLFFQYLHP LRS LFTHNV DYLHCVCHQ HPRTRVENSE
451 PPFETEARQS VV
```

FEATURES:

Functional domains and key regions:

[1] PDOC00001 PS00001 ASN_GLYCOSYLATION
N-glycosylation site

Number of matches: 2

1	302-305	NFSR
2	323-326	NFSC

[2] PDOC00004 PS00004 CAMP_PHOSPHO_SITE
cAMP- and cGMP-dependent protein kinase phosphorylation site

Number of matches: 2

1	59-62	RKNS
2	169-172	KRMS

[3] PDOC00005 PS00005 PKC_PHOSPHO_SITE
Protein kinase C phosphorylation site

Number of matches: 6

1	64-66	TYR
2	137-139	TRK
3	157-159	SIR
4	252-254	TSR
5	264-266	TLK
6	354-356	SVR

[4] PDOC00006 PS00006 CK2_PHOSPHO_SITE
Casein kinase II phosphorylation site

Number of matches: 3

1	17-20	SSLE
2	18-21	SLEE
3	431-434	TRVE

[5] PDOC00007 PS00007 TYR_PHOSPHO_SITE
Tyrosine kinase phosphorylation site

126-133 KEEQEEPY

[6] PDOC00008 PS00008 MYRISTYL
N-myristoylation site

Number of matches: 4

1	215-220	GATLCN
2	321-326	GINFSC
3	343-348	GQNWGH
4	350-355	GLHYSV

[7] PDOC00029 PS00029 LEUCINE_ZIPPER
Leucine zipper pattern

100-121 LFMHLILLGPFVIRCLEAMIKYL

Membrane spanning structure and domains:

Helix	Begin	End	Score	Certainty
1	36	56	1.443	Certain
2	74	94	2.084	Certain
3	102	122	0.920	Putative
4	181	201	0.811	Putative
5	208	228	1.744	Certain
6	273	293	1.234	Certain
7	312	332	1.785	Certain
8	366	386	0.828	Putative
9	389	409	1.497	Certain

BLAST Alignment to Top Hit:

>gi|6502963|gb|AAF14527.1|AF155511_1 (AF155511) KX antigen [Mus
musculus] Length = 446
Score = 366 bits (930), Expect = e-106
Identities = 179/411 (43%), Positives = 265/411 (63%), Gaps = 11/411 (2%)

Query: 33 FPFSLFSTFLYCGEAASALYMVRIYRKNSETYRMTYTFSSFFMFSSIMVQLTLIFVHRDL 92
FP S++ S FL+ E A+ALY+ YR + T F + +VQ TL+FVHRDL
Sbjct: 3 FPASVIASVFLFVAETAALYLSSTYRSAGDRMWQVLTLLFSIMPCALVQFTLLFVHRDL 62

Query: 93 AKDKPLSLFMHLILLGPVIRCLEAMIKYLTWLKKEEQEEPVSILTRKKMLI-DGEEVLIE 151
++D+PL+L MHL+ LGP+ RC E Y + ++ EEPYVS+T+K+ + DG +E
Sbjct: 63 SRDRPLALLMHLQLGLYRCCEVFCIYC---QSDQNEEPYVSITKKRQMPKDLSEEVE 119

Query: 152 WEVGHSIRTLAMHRNAYKRMSQIQAFGLSVPQLTYQLYVSLISAEVPLGRVVLVVFSLVS 211
EVG + L HR+A+ R S IQAFGLS PQLT QLY++++ + GR +M SL+S
Sbjct: 120 KEVGQAEGKLITHRSASFRRASVIQAFGLSAPQLTLQLYITVLEQNITTGRCFIMTSLLS 179

Query: 212 VTYGATLCNMLAIQIKYDDYKIRLGPLEVLCITIWRTLEITSRLILVLFSATLKLKAVP 271
+ YGA CN+LAI+IKYD+Y++++ PL +CI +WR+ EI +R+++LVLF++ LK+ V
Sbjct: 180 IVYGALRCNILAIKIKYDEYEVKVKPLAYVCIFLWRSFEIATRIVIVLVLFSTVLKIWVVA 239

Query: 272 FLVLNFLIILFEPWIKFWRSGAQMPNNIEKNFSRVGTLVVLISVTILYAGINFSCWSALQ 331
++NF PWI FW SG+ P NIEK SRVGT +VL +T+LYAGIN CWSA+Q
Sbjct: 240 VILVNFFSFFLYPWIVFWCSGSPFPENIEKALS RVGTTIVLCFLTLLYAGINMFCWSAVQ 299

Query: 332 LRLADRDLDVKGQNWGHMGLHYSVRLVENVIMVLVFKFFGVKVLVNYCHSLIALQLIAY 391
L++ + +L+ K QNW + ++Y R +EN +++L++ FF + + C L+ LQL+I Y
Sbjct: 300 LKIDNPELISKSQNWYRLIYYMTRFIENSVLLLLWYFFKTDIYMYVCAPLLILQLLIGY 359

Query: 392 LISIDFMLLFFQYLHPLRSLFTHNVVD----YLHCVCCHQHPRTRVENSEP 438
I FML+F+Q+ HP + LF+ +V + L C C R ++SEP
Sbjct: 360 CTGILFMLVFYQFFHPCKKLFSSSVSESFRALLRCACWSS---LRRKSSEP 407

ALIGNMENT OF FORM 1 AND FORM 2:

>FORM 2

Length = 462 (Length of FORM 1 = 449)
Score = 900 bits (2301), Expect = 0.0
Identities = 447/449 (99%), Positives = 447/449 (99%)

FORM 1: 1 MDRVYEIPEEPNVDPVSSLEEDVIRGANPRFTFPFSILFSTFLYCGEAASALYMVRIYRK 60
MDRVYEIPEEPNVDPVSSLEEDVIRGANPRFTFPFSILFSTFLYCGEAASALYMVRIYRK
FORM 2: 14 MDRVYEIPEEPNVDPVSSLEEDVIRGANPRFTFPFSILFSTFLYCGEAASALYMVRIYRK 73

FORM 1: 61 NSETYRMTYTFSSFFMFSSIMVQLTLIFVHRDLAKDKPLSLFMHLILLGPVIRCLEAMIKY 120
NSETY MTYTFSSFFMFSSIMVQLTLIFVHRDLAKDKPLSLFMHLILLGPVIRCLEAMIKY
FORM 2: 74 NSETYWMYTFSSFFMFSSIMVQLTLIFVHRDLAKDKPLSLFMHLILLGPVIRCLEAMIKY 133

FORM 1: 121 LTLWKKEEQEEPVSILTRKKMLIDGEEVLIEWEVGHSIRTLAMHRNAYKRMSQIQAFGLS 180
LTLWKKEEQEEPVSILTRKKMLIDGEEVLIEWEVGHSIRTLAMHRNAYKRMSQIQAFGLS
FORM 2: 134 LTLWKKEEQEEPVSILTRKKMLIDGEEVLIEWEVGHSIRTLAMHRNAYKRMSQIQAFGLS 193

FORM 1: 181 VPQLTYQLYVSLISAEVPLGRVVLVVFSLVSVTYGATLCNMLAIQIKYDDYKIRLGPLEV 240
VPQLTYQLYVSLISAEVPLGRVVLVVFSLVSVTYGATLCNMLAIQIKYDDYKIRLGPLEV
FORM 2: 194 VPQLTYQLYVSLISAEVPLGRVVLVVFSLVSVTYGATLCNMLAIQIKYDDYKIRLGPLEV 253

FORM 1: 241 LCITIWRTLEITSRLILVLFSATLKLKAVPFLVLNFLIILFEPWIKFWRSGAQMPNNIE 300
LCITIWRTLEITSRLILVLFSATLKLKAVPFLVLNFLIILFEPWIKFWRSGAQMPNNIE
FORM 2: 254 LCITIWRTLEITSRLILVLFSATLKLKAVPFLVLNFLIILFEPWIKFWRSGAQMPNNIE 313

FORM 1: 301 KNFSRVGTLVVLISVTILYAGINFSCWSALQLRLADRDLDVKGQNWGHMGLHYSVRLVEN 360
KNFSRVGTLVVLISVTILYAGINFSCWSALQLRLADRDLDVKGQNWGHMGLHYSVRLVEN

FORM 2: 314 KNFSRVGTLVVLISVTILYAGINFSCWSALQLRLADRLVDKGQNWGHMGLHYSVRLVEN 373
 FORM 1: 361 VIMVLVFKFFGVKVLNLYCHSLIALQLIIAYLISIDFMLLFFQYLHPLRSLFTHNVVDYL 420
 VIMVLVFKFFGVKVLNLYCHSLIALQLIIAYLISI FMLLFFQYLHPLRSLFTHNVVDYL
 FORM 2: 374 VIMVLVFKFFGVKVLNLYCHSLIALQLIIAYLISIGFMLLFFQYLHPLRSLFTHNVVDYL 433
 FORM 1: 421 HCVCCCHQHPRTRVENSEPPFETEARQSVV 449
 HCVCCCHQHPRTRVENSEPPFETEARQSVV
 FORM 2: 434 HCVCCCHQHPRTRVENSEPPFETEARQSVV 462

Hmmer search results (Pfam):

Model	Description	Score	E-value	N
CE00306	E00306 Membrane_transport_protein_XK	390.8	1.3e-113	1

Parsed for domains:

Model	Domain	seq-f	seq-t	hmm-f	hmm-t	score	E-value
CE00306	1/1	31	416 ..	1	384 [.	390.8	1.3e-113

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1 TATTATTATT ATTATTAAGA CGTAATCTTG CTCTGTTGCC CAGGCTGGAG
51 TGCAGTGGCG TGATCTCAGC TCACTGCAAC CTCTGCCGTC CGGGTTCAAG
101 TTTTCTCCT GCCTCAGCCT CCTGAGTAGC TGGGATTACA GTCACGCACC
151 ACCACGACCA GCTGTTTTCG ACTCCTGACC TCAAGTGATC TGCCTGCCCTC
201 GTTGGCCAGG CTGTTTTCGA ACTCCTGACC TCAAGTGATC TGCCTGCCCTC
251 AGCCTCCCAA AGTGCTGGGA TTACAGGCGT GAACCACTGT GCCTGGCCTT
301 CATCTATATT ATTACCAGGA GGCAGATGTG TTCTCTTTTT CTCTGAGGTT
351 TAGAATTATG CAAATGAAGA TATGAAAACA AAAGCTCAGT GAGGTGGGGA
401 GGATTACACT TAAGAATACA GGTAATTTTC AAAGCTCTTT AAGACACCCC
451 TCTCAGTTTT TACTAACAGC TCTCTCTTGG CTCTTTGCCA GTCTGTTTAG
501 AATTTGGCAC CTCTTCATAA CTTTTCAACC AAAGACCTGT AAGTTCATTTC
551 TAAAGCTCCT ATCCTGGCCT CATTTTGCAA GTGGAGAAAT CAAGGCATAA
601 AATATGAGCT TTCAGTGTCT GTGGGCTGAC CTTGAGTCTT GACCTTTATC
651 CTGTTCTATC TTCCCTCCGC CGAAAACCTCT GACCTATTTC CTCCAGGTT
701 CCCCCTTCAT GATATTATCT GGAGGGCAAT AGGACCTAGG GAGGTTCCAC
751 CCTGCGGCGG AGGGAGACAC ACCTGCCTAA CAGCGTGGGT AGAGTGAGTG
801 TTGAAGCAAG TCACTTAACT AGTTAGGGAG GCGGGGGTAG AAGTGGGGGC
851 CTGCTGCTCC TAGGGAGGAG TAAAGCTGTG GCTCCTGCCT GGGTCTGGAG
901 GTGGTGGTCA GAAGTGCTTC TGAAGAGCGG CCCAAGCCCC TTTTGTCCC
951 GCCACTCCAC AACGAGCATC CCTCGGCTGG CCGCCTGCCC GGGAACTCTC
1001 CGGCTGGTTT TGTTTGGCCG CAGCCGTCCC GCCCATCTCG CCCGCCCCCG
1051 CCGTCCCGGT GCCTTAGTTT TTGAAGCTGC CGACCTCTCG CAGCTGGAAT
1101 CGCAGACCAG GCAGGACCTT GGCAGCAGAC GCGTCCAAG AGTTGGCGA
1151 CCTCCGTCCA GCCAGTTGG CGCCCCGAC ATCGTGCTC TCACTAGCAA
1201 AGTTTCTCCG AGGAGAAGCA GCCCTCCAG CTTTTCTTC ATCCTGTAGA
1251 GCGAGCGCGC TCTGCTTCTG TCCCTCAACA CTGCATTCGG AGACAGGGTG
1301 GTGACAATAC TCCACTCCCG GGCCAGGCGG TCTTGGGGGC GGGGCTTGGG
1351 GGAATCCGAG GAGCTATCCT GAGAACCCTG GACTCGGCAA AGGTCTGAG
1401 AGCGCGCAGG TGAGCGGGCC AGCTGATAGC TACAGCCTAG CAATAGCTAG
1451 GATACCTAGG CACTGAACTG AATCCCCTCT TCTGCCCTCC TTCTTCTGCG
1501 CCCGCTCTTC TGCCCTGGCT CAGCTCTCCG CTGACTTGAG AGGACACACT
1551 GGTCAAGACT CTTTGTGAGG AGCTGCTGAG TGTGCGTGCC CCCGACAGAT
1601 CGGCTACACC CTGCTGAGG GGCTGCGAAA GGAGCCGCCA CGGAAGCCGC
1651 TGTTCTCATG ACTCTTCACG TCCCTGGAGT TGGACTCTGG ATGGGGCGCT
1701 GGGATGCTTG CTTTTGTCTT GTTCAAGTTT CACAGCAAGT ATGTTGACGA
1751 TTGGAATCGG GGCCAATCAA GAGTCAAGTT CAAAGTGGTA CTCCTGGGCT
1801 TTCCATCCCA GAGTCCAAGT CGAATCTGAG TCTAGAAGAG AGCGGTTTCT
1851 TGCTCTAACT AGTGAATCTC TGTTCCTCAA CTGGACTTGA CAGAGCTCTC
1901 CTCACCTATA CTTGGACTGT AGCGGCCATA GGGTCTCTCT GGGGATGGGT
1951 GGGAGGGTGC TATGAACACA AGACCACAAC ATTCAGAAAG AACCTCGACA
2001 ATGGACAGAG TTTATGAAAT TCCTGAGGAG CCAAATGTGG ATCCGGTTTC
2051 ATCTCTGGAG GAAGATGTCA TCCGTGGAGC CAACCCCCGA TTTACTTTTC
2101 CATTAGCAT CTTTTCTCC ACCTTTTTGT ACTGTGGGGA GGCTGCATCT
2151 GTTTTGTACA TGGTTAGAAT CTATCGAAAG AATAGTGAAA CTTACTGGAT
2201 GACATACACC TTTTCTTTCT TTATGTTTTT ATCCATTATG GTCCAGTTGA
2251 CCCTCATTTT TGTCCACAGA GATCTAGCCA AAGATAAACC GCTATCATTA
2301 TTTATGCATC TAATCCTCTT GGGACCTGTT ATCAGGTGAG CAACTTTTAA
2351 ATCTTTTCCT TACCCCTTA ACCCCACCCC AGACTTGGGC AGAGAAAGAT
2401 GAAAGATTTA CAAGATGGAT ACTATGGCTC TAATCAATT CTTCAATTCC
2451 TCCCACCTC GGCCTCCCTG TCTACCATT AGAAAACTTA CCTGAAATCT
2501 TAAATGCCAC CATGATGAAC ATGTGGTATG TACTTGTGTT CCAAAACAAT
2551 GAACGATGCT ATTTGGGCTG TGTAAGTAG AATGGGAACA ACAAGACGTG
2601 ATCACCTGT GCATGAAGGC CATAGCTGCA GAGTGTGTAA TTTTATTTAA
2651 AAAAATTTTT TTTTCTGAGA CAAGGTCTTG CTCTGCCTCC CAGGCTACAG
2701 TGCAGTGGTG CGATCATGGC TCACTGCAGC CTTGATCTCC TGGGATCAAG
2751 CGAACCTCCC ACCTCAGCCT CCAAGTAGCT GGGACCAAAG GAATGTGTCA
2801 CCATGCCTGG TTAATTAATA AAAAATTTTT ATAGGCCGGG TGTGGTGGCT
2851 CATGCCTGTA ATCCCAGCAC TTTGGGAGGC TGAGGCCGGT GGATCACCTG
2901 AGGTCAAGGAG TTCAAGACCA GCTGGCCAAC ATGTTGAAAC CCCTGTCTCT
2951 ACTAAAAATC AGCTGGGTGT GGTGGCGCAT ATCTGTAATC CCAGCTACTC
3001 TGGTGGCTGA GGCAGGAGAA TCACTTGAAC CCGGAAGGTA GAGGTTGCAG
3051 TGAGCCAAGA TCGGTGCCAC TGCACTCCAG CCTGGGCGAT AGAGTGAGAC
3101 TCCATCTCAA AAAAAAAAAA ATTTTTTTTG TAGAGACGGG ATCTCGTTAT

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FIGURE 3, page 1 of 8

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3151 GTAGACTGGG CTCAAGTGAT CTTCTGCGCT CAGCCTCCCA AAGTGAGCCA
3201 CCACGCCCTGG TCTGAGTGTG TAATTTTGAC TCTACCTTTT TGGATGCTTT
3251 GTAAATTGGA TAAAAGTTTC TTTACCCTGA GCTGCTTGGG CTGGTGCTAC
3301 TGCCATTTTC AAATTTTCCA GAGTAATGTG ACATCTGGAA ACTATTTTAA
3351 ACCATCTGTG GTAATCTGTA CCCCACCCA ATATAGTTCA GTTCTCTGTC
3401 GGTTTATCAG TTTCTATTT ATCTCTTTGT ATATTTCTGC AATAAAGATA
3451 CGAAGTTGGG AGGGGGGCAA GGAAGGCAGT TCATCTCTCT ATGTGGATGC
3501 AGTAGCACAA TTTAATAGTA TCAAGTATTT CCATTCAGAT TGCCTTGAAG
3551 TGGAAAGAAAT GCACTTAATC CTAGCGAGAT AGGCACCTGT GTCAACAGTC
3601 TCATCTGGAT GCTATGGGGT TTTCAAGGTA GAGAGATGTT GCAAAACTTA
3651 TGAGTTTCAGG AGTAAGGAAT GGACCAAGTT TGTCTTGATT GCGAGAGAGG
3701 CAGACAACCTG CAGTCAGCCG AGGAATATGG GTCAGAGTGT TGCAATGGGA
3751 AGATACCTCA TCATTAGACA ACTAAAAGT CTGTGAAACT AATTAAGGAT
3801 GGAAGTCACT CCTTTATAAA ATTTTCATATC TGTACACATG TATAATTTTT
3851 ATTTGTCACT TATACCTCAA TAAGGCCAAA AAAATTTTTT ATCAATAAAT
3901 TTTTAAGTGG GGAGGAATCG ATTAGGCTCT ATCAGAGAGA ATATGGGATA
3951 TCAATGGAAA CAGTGGCCTG AAATTTGGAG TCTAGTCTTC CGCCTGTCAT
4001 TGAAGTGGTG TGTGTTCTTG GTAAAATCTC TGAAGATGGC TTCACAGGAA
4051 GGCATATAGA GTTCCCTCAT CTGTAAAGCA AATGGGTTAG TCTAAATCAT
4101 GGGTCTCAAA CTCAAACACT TGCAGGGACC AGGCAGGTAT CATAAATGAA
4151 TGAAGCAGGC CTAGTATAAG AAAAAACAGT AGCCTTGTGT GAGATGATAA
4201 ATGGAAACAA AGTCTCAGAG AAATACTGAG GAGTAGTGAG TACCATGGTA
4251 ATCTGAAATC TTCATGACCT GCCTGAAGGA GGTAGCCCCT CTAGAGCCCT
4301 GCGCGATTGT TTCCATGTTG GAATTCAGAC CCAGTATTGC CAGATCCACT
4351 AACTTTTCGG GAGATGCTCC CAAGACAGGA TTTTATATG AAATGTCATG
4401 ATTTTAAATT TTCACAGCTG ACTAAAACAA TAACAACAAC AACACAGGAT
4451 GGACCAAACC ATATCTGTTG GTCAGATATA ACTCAGCTGG CCTATATGCA
4501 TCTTTGGACT GGGTGATGTA AAGGTCCTTT ACGGTTCTAA ATCTTTGAAG
4551 TTAAGCTGTA AAAGGAAGAC CTCATCTTGA CTTGAAACC AAGAAATTTA
4601 AAGTTGTGAC TACAGGAGCA AATAAACCAT TCATCCCTCC TTTTCAAAAT
4651 ACAATATATT GAAGTTAACCA ATCGAAAAC CTCAAGATAC AAATTTCAGA
4701 AAGTACCCAG CTGCACCCTC CCTCTTTTT GACTTCCTTT GTTTGCTTTG
4751 TGAACCTCTT GTGTAGAGTG TTGAGTACTG TTTTTCATTT TTGTGTGTTA
4801 GCTTCCACTA GAAATGATTG GGAAGCATT ATAACCTCAG GCAGCTTAGC
4851 CCACAGCAGA GAAAAGATAA AAACCTATAA ATTATACTCT GGATTCGCTT
4901 ATTTTCAAGG CCAATTACTT GTTAGATAGG TAGGAACTTG ATTAGTGTTA
4951 TCAGGCACAT GAAGGTGCTT GTAGAGTCTG GGTGCCCTAC ATGAAATGCA
5001 AGCATACTTC CGAAATGAAA ATGTACTCTA ATTTATTGAA GCTTATAAAT
5051 GGACAAACAC CCTTACTTAA ACCAGAAAAT AGCCCTGAGA ATAGAAACAG
5101 AACATTTATG TAAATGTAAA CGGAACATT CATGCCACCA CCTTCTCCAA
5151 TACTGTTCTC CAATTTAGCA ATAGTACTGA TGGGTTGGGG TTAAAATCTA
5201 AAATTTTTC TTTGAAAATGC ACTTATGCAG AACAAGAATA GGAAAAAGT
5251 GTTGCTTTTT CTCTCTGTT CTTCTTTTGC ATCTTTTTCT TTCCAGGTC
5301 TTAGAGTTTG TTCCCTAGAAG GTGACAATTT CAAACTACAT GCTTCAGAGT
5351 GGTACACATG CATCAGTCTT AGGGTGATCT ATGGAGACTG GCAGCCAGCA
5401 TATGTTCCAA ATTTTCTAT CAGGAACATA AGGCTAGAGA GCATATCAAC
5451 CTCTGGGCTT GTCTTTGGTC TACTTTTCTG TTAAATTTCA TTGCTGTTAT
5501 TATTATCCTC TCCTCCCAT AATTGCTTACC CTGTATTATT TTCTTCCTTC
5551 TTATCTTTTC ATTTACTCAG CAAATATTT TCAAATACCT ACTAAGTGAT
5601 AAGAGCTGTA AACAAGATAA ATACAACCT TGACCTCAGT CTCTTGGGCA
5651 AGACGTGTTA ATGTCCACTA CAAATGTTCT TACTAGTCAT AAGTAGTCCA
5701 CAGTTTTTAT TCATTAAAGG TGAGTGGCGA AGTGGTAACT CAGGTGTTCC
5751 AGTAACAAGA ATGTTCTAGT TGCTTCTCTT CCACTTACCA CATCAGAACT
5801 GCTAAAGACT TCTGATTTGT ATGGGGGAGG TGGGAGGGGC AGAGCAGGAA
5851 ATGTCATCTT ACCCTTATTC CAAGGATGAT AGGCTTTCAT AAGGATGTTT
5901 TTCTCTTCGT AAAGAAAGAA TCCAGTTTAA AAGGCTTTTG TCCACAAACA
5951 GGACAAGAGG ACACAAAAGT AACTATTACA GTGATCTTTC GAGGGCCTAG
6001 TTATGTAGTT CATTCAGGTT TGAGTTGTCT TCTTTTAAGT ACTTTTGTG
6051 CTTTGATGGC TTCCTGTGTA TATGAGATAT TTTTTCCT CTGATCTGTC
6101 CCAAGACTTT TTGGCTGAGA TATGGTTGTG AGCCCTTTCT TGAAAAAGCA
6151 GAATCTGGCC AGGCGCAGTG GTCATGCCT GTAATCTCAG CACTTTGGGA
6201 AGCTGAGGTG GGTGGATCAC CTGAGGTCAG GAGTTCAAGA CCAGCCTGGC
6251 CAACATGGTG AAAACCCGTC TCTACTAAAA ATACAAAAAA AAAAAAACC

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FIGURE 3, page 2 of 8


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6301 TTAGCCGGAC ATGGTGGCAC ATGCCTGTAA TCCCAGCTAC TCAGGAGGCT
6351 GAGGCAGGAG AATCGCTTGA ACCCAGGAGG CAGAGGTTAC AGTGAGCTGA
6401 GATCGCGCCA GTGCACTCCA GCCTGGGCGA CAGAGCAAGA CTCTGTCTCA
6451 AAAAAAAGAA AAAAAAGAAA GAAAAAGCAG AATCTAAAC
6501 TTTGGTTATG GAGCTGAATG CTTTGAGGGA GGAATGCTTT ACCTCACGAA
6551 TTTGAGGTAA GAAACAGGG CCTTTGGAAC CTTTATTATT TTGCTAGGAA
6601 AACAGTATCG ACTTAATACC TTTGTGTTCA AGGCACTTTT CTACCTGCCA
6651 CAGGCCTATT CTAAAAAGA CAAAACAATT CCTCGAGTCC TCAAACAAGT
6701 ACTTCTGAAA CAGTGTCTT AGGTCAGTCG ATGACTGAAC AAAAATGGAT
6751 TTAGATTATG GTAACCTTGT GAAGGCATGA TCCACCCTTT GACTTATGAG
6801 AAATGATCAG AACAGAAGAG AGAAAAAGAC AAAAAAGTAGT GCAGGCTGGC
6851 CATGGTGTCT CACACGTGTG ATCCCAGCAC TTTAGGATCC CAGCACTTTG
6901 GGTCAAGGCA GTAGGATTGC TTGAGCCCAG GAGTTTGAGA CCAGTCTGGG
6951 CAACATGTCT AGATCTCCTC TCTACACAAA TTAATAATAG CTGGCATGGT
7001 GGCATGCGCC TGTAGTCCTA GCTACTCAGA AGGCTGAGGT GGGAGGATCA
7051 TTTGAGCCTA GGAGGTCAA GCTGCAATGA ATTATGATTG TGCCACTGCA
7101 CTCACGCCAG GGTGATGGAG TAAGACCTTG TCTCAAAAAT AAAATAAAGT
7151 AGCACAACCT CCCCAAGTTA TTTTTTTCCC TCACTACAAC CTCCCTTCCC
7201 AGGACAGCTT AGTTAAGTTT GCATGATGCT TTACTTCTGC AGATGTTTGG
7251 AGGCCATGAT TAAGTACCTC ACACTGTGGA AGAAAGAGGA GCAGGAGGAG
7301 CCCTATGTCA GCCTCACCCG AAAGAAGATG CTAATAGATG GCGAGGAGGT
7351 GCTGATAGAA TGGGAGGTGG GCCACTCCAT CCGGACCTCG GCTATGCACC
7401 GCAATGCCTA CAAACGTATG TCACAGATCC AAGCCTTCCT GGGCTCAGTG
7451 CCCAGCTGA CCTATCAGCT CTATGTGAGC CTGATCTCTG CAGAGGTTCC
7501 CCTGGGTAGA GGTGAGTGGG GTCAGGAGAG GGGAGGGCTC CAGTTAAATC
7551 AAGGGTCTTA GAAGTCTAGA CCCAAGCTGT CTAATAAACT GGCCACTAGC
7601 TTCATGTGGC TATTTAACTT AAAATTAAAT AAAATTAAAA ACTTGTTCAT
7651 TAATACTAGC TACATTTCAA GTTCTCAGCA GCCGTGTGTT GCTAGCAACT
7701 ACTGTATTGG ATGGCACAGG TATAAACATT TCCATCATCA CAGAAAGTTC
7751 TATCGGACAG CACTGGGAGA TAGTTAAATA ACTTGTGGAG TCAGACATCT
7801 CAAGCCTGCG AATTTCTTA AACAGGTAAG CTGTTTAGAC TAAAAATGTC
7851 ACAGATAAAC CTCTCTGGG CCCAGAAGAA GCTAGTAATA CCAGCAGTCA
7901 GTAGGATATT TTCCTTGCC CAAAATGTTT AAATTATGCT GTTGTTTTGT
7951 TTGTTTAAGG ATGGCAGTCT TTAATAAGAG GTTCCCAAAT AGTACTGATC
8001 ATCAGAAATCA TGTGATGAGC TTCTTTTTGA AATTATATTC ACTCCCAGA
8051 CTTGAATCAA TCTTAATATG TATTTCTAAA AGGTACCCAG TTGATTTTGA
8101 TCAGCCACAT TTGGGAACCA ATGATTTAAT CATTTCTGCT AATGCCAGTG
8151 GAGAGAAAGA AAAGGAGCGT GGGCTGGGCA CGGTGGTTCA AGCCTGTAAT
8201 CCCAGCACTT TGGGAGGCCA AGGCGGGTGG ATCACAAGGT CAGGAGATTG
8251 AGACCATCCT GGCTAACATG ATGAAAACCC GTCTGTACTA AAAATACAAA
8301 AAATTAGCCG GCGGTGGTGG CAGGTGCCTG TAGTCCTAGC TACTCGGGAG
8351 GCTGAGGCAG GAGAATGGCG TGAACCTGGG AGGCGGAGCT TGCAGTGAGC
8401 CGAGATCGCG TCACTGCACT CCAGCCTGGG TGACAGAGCA AGACTCCGTC
8451 TCAAAAAAAA AAAAAAAGAA AAAAAAAGAA GCGTGGGGTT AATACTAATG
8501 AGAGTCAGGC CTGGACCAAG TTCTGACCTT CACTGTGATC TTTGGAGGAA
8551 GTTACAAAGC AATCACTGAC CTAATTTCCC ACTTGTAGAA GAGGGATCCT
8601 GAAATGAGTA AGACCTCTAG CAGAAGATGA AATGTGAGTC AGTGTTTTCA
8651 AAGTTGAGAT AAATTGTTGT TAATGAATTT TAACAGCCTG AGATTTGCTT
8701 CATCTGCTTG GGCAGGCACT GGTATAGGTG TGGGTACAGG TTTGGACCAT
8751 TTCCTATTAG ATTCTAACCC TGTTTGGCAA AGTCCCATGT CTCAAATAAG
8801 GTAAGGAGAA AATTTGCCCT CTTTGTCTT TTTTCCCCAC TCAGAATTGT
8851 TCTTGAAGTT CTGTTGGTCT TGAAGCTTTT CACATACATA GTAGTTTGAG
8901 GAGAAACTC TTTGGAAATG ATGATGCTTT TCCTTTAAAT CATCTAATAA
8951 AAATAGGTGT ACATTACGGC TGGGCATGAT GGCTCACGCC TGTAATCCTA
9001 ACACTTTGGG AGGCCAAGAC AGGCAGATCA CTTGAAGTTG GGAGTTCAA
9051 ACCAGCCTGG CCAACATGTT GAAACCCCAT CTCTACTAAA AACACAAAAA
9101 AAATCAAGGA TGGCATGGT GGCTGATACC TGTAATCCCA GCACTTTGGG
9151 AAGCCGAGGC AGGTGGATCA CCTGAGGTCA GGAGGTTGAG ACCAGCCTGG
9201 CCTGGCGAAA CTCTGTCTCT ACTAAAAATA CAAAAATTAG CCGGGTATGG
9251 TGGTGGATGC TTATAATCCC AGCTACTTGG GAGGCTGATG CATGAGAATC
9301 ACTTGAACCT GGGAGCCGAG ATCTCACCGT TGCACTCCAG CCTGGGCAAC
9351 AGAGCGAGAC TCTGTCTCAA AAAAAAATTC AGCCAGGCGT GGTGGTGGGT
9401 GCCTGTAATC CCAGCTACTT GGGAGGCTGA AGCAGGAGAA TTGCTTGAAC

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FIGURE 3, page 3 of 8

9451 CTGGGAGGTG GAGGTTGCAG TGAGCTGAGA CTGCACCACT GCACCCAGC
 9501 CTGGGCGACA GAGGGAGACT CCCGTCTCAT AAATAAATAA ATAAATAACA
 9551 AAAGTAATAC ATGCACAAAA TGACATATAA GTAATTGTAT TTGCACAGAA
 9601 AATTTCTGGA AACTATGCAA GAAACTACCT CTGCGGAGTG GGAATGAAAA
 9651 GTCAGCAGTC TTACTTTTAA AAATCTTCT GTATGGTTTG AAAATTTTTT
 9701 TTGTGATCAT GCATTACTAG TTTTGGTCTT TATCTTTTTT TAATTACAAA
 9751 AGTCAGACAT GGTATAGTA AAAATTAAAA ACCATACAGA ATAGATATAA
 9801 AATAGGAAAC GTAATCTCAC TCCCCAAAGA TAACCTCTGT TAATCATCCA
 9851 GTATATATCC TTCTGGACTT ATTTTACTA TGTAAACATA AACATACATA
 9901 CAATATATAT TGTACATGTT TTTGCCCAA AATGGACTGT ATGAAACATT
 9951 CTGTCAACAA AGTATTTTTC AAAAGTACAG TATGCCAGTA TGTCTTTTCT
 10001 CAAGTTATTT ATATATACAT GTATAACAAT AATAAATATA TAATATACAT
 10051 TTCCTTTATA TGAATTAGAC TATTTTATT CTCCTAATTT TCTATTGATA
 10101 GGATTCTATT GATTGTCTCA AAAAGGAAAA AAAAAGGTAG CACAACCTCC
 10151 CCTAGTTATT TTTTCCCCTC ATTACACCT CCCTTCTCAG GACAGCTTTA
 10201 GTTAAGTTCC CATGATGCTT TACTTCTGCA GATGTTTGA GGCCATGAGT
 10251 AAGGACTTCA CACTGTGGAA GAAAGAGGGG CAGCAGGAGC CCTATGTCAG
 10301 CCTCACAAAT TTTAATTTT CACAAAAAAG TTGTTCCCTA ATTGCAAATT
 10351 ATGCCACAGT AAACATCTTT ATAAATACCT GTGTACATGA ATGAGACTTT
 10401 GTAGGATAAA TTTATAGCAG TAGAATTGCT GGGTGAAGG ATATGTATGT
 10451 TTAAAATTTT ATTGATATTG CCAAATAACT CTTCCAAAAA GATATATGAA
 10501 TTTATACTCT CACCAACAGT ATACAAATGT GCCTGTTTCT GTTCTTTCAT
 10551 ATCTTAAACT CAATATCTT TATTTGTATA ATTATAAAAT AATTGGCTTT
 10601 TAAAAAATT GACTTTTAAA ATAATTCGCT TTCTTTGGTT ATGAATGAAG
 10651 CTGAGCATCT TTTTGTGTTT GGTCATTGTG TGTCTGTGA ATTGCTGTG
 10701 TATATATTTT ACTCGCTTTT TCTAGTGGGT TGTCTTTTTC ATATTAATTT
 10751 TTAGGAGCTA TTTACTTATT CTTGTTATTA ATCCTTCTC TGCTGTGAAT
 10801 ATGTATGCAT ATATTTGTAT AATTTTTTGC TTGTACATAC ACACATTTTA
 10851 AATATGTATA TACATGTCAT ACGTGTAAAT TGTGTGTGAT ATATTTAATA
 10901 TCCACAATAC ACTTTGTAGT ATCTTCTGGC ATTCTGAAGT ATTACATTTT
 10951 TATGTATTCA AATCTTTTAT TGCTTTTAGA TTTTGTGCCT TTCTTACAAA
 11001 GGCTATCAC ATCTCTCATC TGGTAGAACA ATTTTCCCA ATCTTTAAG
 11051 TAGATTAATT TTCAAGATAA TTTTTTAAAT CATCTACAA AAAACAAAGC
 11101 AAAATAATAA CAGCAAAAGA AAAAAACATT TCATTGAGAT TCCGATTGAG
 11151 ATTTGCATCA AATTACTTAG GTTATTTTGG GAGAATTAC ATCTTTATAG
 11201 GATTGTTGGA TTTCATATTG TGAAATGATA AATCTCTCCA TTTTATTTAA
 11251 TATTTTAAAC TGTACCTCAG TAAAATTGTA TAGTTTCTT CAGTAAAGTT
 11301 GTATAGTTT TTGCTATGA GTCTTACATT TTTATAAGGC TTACTTTCAG
 11351 ATGTTCTATC AGTTTAAAA TGACCTGATT TTCTAAGTAG CAGGATAGTA
 11401 TCCAGGTAAA GTAAACCCAC CTACCATACT TTTGGAAATA GGGGGATGAT
 11451 GAAGATGACA AAGAATAGGA AGAAAGAGGA GGAGGGGGAG GAGGAGAAAA
 11501 AGGAAAGGAA GAAGGGAAGA AGGAAGAAGA AGAAAGAAGA ACACAGCTAA
 11551 AAGAATTAC TAGGTTCTAG GCATTTCTCT AAGCCCTTA CATGTAAATG
 11601 TTTATTTAAT TTTTACCACA ACCCTATGAG ATAATTATCA TTCTCATTTT
 11651 ACAGACGAAG AAACAGACGC ACTGAGAGTT TAAGTATATT CCCCCAAGGT
 11701 CCCATAAGCA AAGATTGGAT TGAATTCCAG GGTGTTTGCC TCCAGAGCCT
 11751 GTGTATTTTG TTCTCTTATG GCATGAGTGT ATTTGTAGGG ACACAGATTG
 11801 AAAATGTTT GACATTTATT GGAAGCATCA GGTTTTTTTC CTTCTGTTAC
 11851 ACTACTAATC AATAAATGAG TTCTAATGTA AGGGAAAGCA TCGCCACACA
 11901 GCTGGATGTA TGCTCTCACA TTCCCAGTTA CATAAGGTGC ATCAGCTCTT
 11951 GAGGATGGGA CTGAGAATGG TTGAGAAAGA CAAGAGTCAC CACTTCAAGA
 12001 GTCTCCAATT CCAGTCTCTG AGATTCCAAC ACTCTACTTA AAACGAAGA
 12051 ACTCAGAGCT GTGCTTCCTT TTGGGTTTAC ATGGGGGAAA TCTTAACTTT
 12101 TCCTCCACTA AAAGTAAAG ATTAAGTTGA CATCTCTATG GCCACCTTTT
 12151 CCCTACATCA AGTGTTTTAA TAGGAACAGA AAACCTCCAGC TTTCTTTTGG
 12201 GATGAGTATT CCTCAGCCAT CCCACTTCTC TTGAGAGCAC TGGATTTTTC
 12251 TTAGTAATCA CCTCCTTTG ACATAAAGGA AGAAAAGGAA AGGGCCACCT
 12301 GTGTCATCTA TAGTTGAGGC TTAGGTAGGT TAGGGAGCAT CCTGGCTCTT
 12351 TAGGGCCACT ACTCTAACAT ATGGTTCCAT GGATGTCATG GGTGAGGCAA
 12401 CAGGGTTTGG AAATTTTGA ACTACTCTGC TGCAAACCTCA GAGATTCCCTA
 12451 ACATATGGGG GTAATGAATT GACATTGCTG ATGACAAATA TAAGCAACTC
 12501 TTGAGTATCT CAGTGAATTG AGAACTGAGG TACATAGATA TTCAGTGACT
 12551 TCCAAAAGTT CCCATACAGC TGAACCAAGG ATTTCTTTCT TTCTTTCTTT

FIGURE 3, page 4 of 8

12601 CTTTCTTTCT TTCTTTCTTT CTTTCTTTCT TTCTTTCTTT CTTTCTTTCT
12651 TTCTTTTCTT TCTTTCTTTC TTTCTTTCTT TCTTTCTTTC TTTCTTCTTT
12701 CTTTCTCTTT CTTTCTCTCT TTTTCTTTT CTTTCTTTT CTTTCTTTT
12751 TCTCTTTCTT TCTCTCTCTC TCTTCTGTC TTCTTCCCTT CCTCCCTTTC
12801 TCTCTTTCTC CTTTCTTTT TTCCCTTCTT CCTTACAGGC ATGCACCACC
12851 ATGCCCAGCT AATTTTTGTA TTTTGTAGTAG AGTACCGGGT TTCACCATGT
12901 TGGTCAGGCT GGTCTTGAAC TCCTGACCTC AGGTGATCCA CCCACCTCAG
12951 CCCCACAAAG TGCTTGGGAT TACAGGTGTG AGCCACCGTG TGCACGGCTG
13001 GAACCAAGGA TTTCTAATTA GTTTTATTTT TTATTTTTTT TCTTTTTGAG
13051 AAGGAGTCTC ACTCTGTCTC CCAGGCTGGA GTGCAGTGGG GCAATCTCAA
13101 CTCACTGCAA CCTCTGCCCTC GTGGGTTCAA GTGATTTCTG TGCCCTCAGCC
13151 TCCTGAGCAG CTGGGATTAC AGGCATGCCA TCATGCCTGG CTAATTTTTT
13201 TTTCTTTCTT TTTGAGACAG AGTCTCACTC TGTTGCCCAG GCTGGATCGC
13251 AGTGGTGCAA TCACGGCCCA CTATTACCTC TGCCCTCCAG GTTCAAGTAA
13301 TTCTCCTGCC TCAGCATCCC AGGTAGCTGG GAATACAGGT GCACGCCACC
13351 ACGCTGACT AATATTTGTA TTTTGTAGCG AGATGGGGTT TCATCATGTT
13401 GGCCAGGCTG GTCTCGAATC CCTGACTTCA GGTGATCCAT CCGCCTTGGC
13451 CTCCAATGT GCTGGGATTA CAGGCATGAG TCACCGCGCC CAGCCTAACT
13501 AGGTATTTTA TGCACCTCTC CTAATCTCAG AAGTCTTCAT TAATCCACA
13551 AACATTTATT GAGCACCTGC TATGTTCCAG GTAATATGTT AGGCTATGGG
13601 AATACAGCAG TGAAGAAAAC ATGGTCCCTC CTGCCTTCAT GGAATTTTCA
13651 ATACACATTT TGACACATCA CTGAAGCTAA GTGTTCTAGA AACACACAAA
13701 CAATGTTAGT TCCTTGAACA AGATATACAT CAAAGAAGGG ACTTCTATTA
13751 GCAAGAGCGT TCTCTATGAG TCTCCTAAGA CTGGATTTT TCAGATAGAG
13801 TTCTTTCCGC CTTATTTCAAT GTTTGCTCCG AAGCCTGCTT CATCAGCAAA
13851 GTCTGCCTGA TACCTTTATA TGTACTCTTC TCACGTTAGT GACTTCTCAA
13901 TGTTCTAAGA CCCATGCTTT TTAAGGAAGT TTATTTTGTG TATTTATATG
13951 ATTATTAAAG TGTACAGTA TATGTTTCATC ATGAGAAATT TAGAAAATAG
14001 AGAAATGTAG AGAAAAAGAT TTCTAAAAC GATATAAGAC TATCACACAC
14051 AAAAAAGAT ATTTTGGTTC ATTTTTCAT TTTTGTGTC ATCTATTTTG
14101 TTTTATTTGA TATATTTCAAG GTGTACAATG TGATGTTTCG ATGTATGTAC
14151 ACATTGTGAA ATGATTACCA CAACCAAAC AATTAACACA TTCATCACCT
14201 CACATAGTTA TCATTTTGT ACGTGTGTGT GTGTGTGTGT GTGTGTGTGT
14251 GGTAAACTTT AAGATCTACT CTCTTTAAAA ATTTCAAGTA CACAATACAT
14301 TATTGTCAAC TATAGTCATC ATGTTGTACA TTAGAGCTCT GAACTTATT
14351 TATCTTATAA CTCTAAATTT GTAGCCTTTG ATCAAAATCC TTCTATTTCC
14401 CTAAATCCCC ATCCCTGGT AACCACCCAT TCTACTCTGT TGCTAGGTGT
14451 TCAACTTTT TAGATTCCAC ATATAAGTAA GACAATGCAG TATTTTCTT
14501 TATGTGTCTA GCTCATTTCA CTTAGCATAA TGTCCTCTAG GTTCATCTGT
14551 GTTGTACAGG ATGGCAGAGT TTCTGTAATT TTATGGTTGA ATAATATTCA
14601 TACACACACA CACACACACG CACACACACA CACACACACA CAGACACACC
14651 CACCAGATTT TCTTTATCCA TTCATCTGTC AACAGATACT GAGTTTGT
14701 CCATATCTTG GCTATTGAGA ATAATACTAC AATGAGCATG AGAGTGCAGA
14751 TATCTCTTTG AGATACTGAT TTCTTTTAGG TATACACCCA CAGTGGGAT
14801 TATTTGATCG TTTGGCCGTT CTGTTGTAA TTTTGTGGA GAACCTCCAT
14851 GCTGTTTTCC ATAATGGCTG TGTCAGTTTA TGTTCCACAA AACAGTGTAC
14901 AAGGTCCTTT TTCTTACATC CCCACCAACA CTTTTTTTTT TTAATAATAG
14951 CCATTCTAAC AGGTGTGAGG TGATATCTCA TTGTGGCTTT GATTTGCATT
15001 TTTGTGATGA TTAGTGATGT TGAACACCTT TTCATATACC TGTTGGCCGT
15051 TTGTATACCG CCTTCGGAGA AAGTCTATTC AAGTGCATGC TATTTGTTTA
15101 CATAGCTGTG ATCATATTTG CATTTGCTCT TAACTGGAGC TCTCAAGTCT
15151 CACCCGTCAT CTCTCTGGAC CTCTGGGTTA TAAGTACAGC CTTTATTACC
15201 AACATTGACT GATTGCCTGT TTTTGTTTT GTTTTGTGT TTAACAGTTG
15251 TGCTAATGGT ATTTTCCCTG GTATCTGTCA CCTATGGGGC CACCTTTTGC
15301 AATATGTTGG CTATCCAGAT CAAGTACGAT GACTACAAGA TTCGCCTTGG
15351 GCCACTAGAA GTCCTCTGCA TCACCATCTG GCGGACATTG GAGATCACTT
15401 CCGCCTCCT GATTCTGGTG GATTCTCTAG CCCTTTGAA ATTGAAGGCT
15451 GTGCCCTTCC TAGTGCTCAA CTTCTGATC ATCCTCTTTG AGCCCTGGAT
15501 TAAGTTCTGG AGAAGTGGTG CCCAGATGCC CAATAACATT GAGAAAAACT
15551 TCAGCCGGGT CGGCACTCTG GTGGTCCTGA TTTCAGTCAC CATCCTCTAT
15601 GCTGGCATCA ACTTCTCTTG CTGGTCAGCT TTGCAGTTGA GGTTGGCAGA
15651 CAGAGATCTC GTCGACAAAG GGCAGAACTG GGGACATATG GGCCTGCACT
15701 ATAGTGTGAG GTTGGTAGAG AATGTGATCA TGGTCTTGGT TTTAAGTTT

FIGURE 3, page 5 of 8

15751 TTTGGAGTGA AAGTGTTACT GAATTACTGT CATTCCTTGA TTGCCTTGCA
 15801 GCTCATTATT GCTTATCTGA TTTCCATTGG CTTTCATGCTC CTTTTCTTCC
 15851 AGTACTTGCA TCCATTGCGC TCACTCTTCA CCCATAATGT AGTAGACTAC
 15901 CTCCATTGTG TCTGCTGTCA CCAGCACCCCT CGGACCAGGG TTGAGAACTC
 15951 AGAGCCACCC TTTGAGACTG AAGCAAGGCA AAGTGTGTGTC TGATTCTATT
 16001 TTTCTGGGTAT TTTAGGAAGA GTTGGGAGTT GCCAAGAGTA ACCATGAAAT
 16051 TGAACGAAAG GATGAGGTTT ATGGGTGAGA TACCCATCAG TACATTTTCT
 16101 TGACTTTTCT GTTAAGCCTA TCAGAAGAAA GAGCAACTCC CAAATAGGTT
 16151 TTATTTTCTT AAGAGTTACC ACTATGTTTG GAAACAGGGG GTATCGACTA
 16201 TATAGTTGAA AGGGTCAGAA ATACCATTCA CACCCTTCTT ACCCAAGTCA
 16251 ATTGAATAA CTTGTCTTCA AACACTTTAG GCTCTCTAAA GTGACCTTCT
 16301 AGCTCTGCTC ATTTGCTTGA TGCATTTCTG AGCTTTCCTG GGCTGAGCTG
 16351 AAGGCCCAGA ATCCCCTAG AATATATCCT GACTGATCAG AGGATATGAC
 16401 AGCTTACCAG CTAAGAGTAC CTCCCAGGAA ACAGTCTGAC TAATGTGGAA
 16451 CCTGCAACTG TCAGTGTGGC TGGGGTCTTT TTAATTCCAG TGAGAAGCTC
 16501 TGGCTGAGAA GAAAATCACC ACTATTAAAA AAGCTGCTCC CCAAGCAGAT
 16551 TAGCTCTCTG TTAGGATTTT ACTAGTGGCC ATTCAGCAAG GACCTCTCTT
 16601 TACAGTGGCA CTTCATAGGC ACACTCTAAG GAGAAAGTGC AGAGTAGAAT
 16651 TCCTTCAGGG CATAAGCCAA AATGACTCTT TTTCTCAGGG ACCTGCATGG
 16701 GCCTCCAGCT TGTCTATTGG AATTGTTAAG TGAAGCCTCT CACTTAGTGC
 16751 CTCATTAGCA GAGATTTCTT CCAACCCAGC TTTTCTGTGC TCTTGGTATT
 16801 TTACTACTTG ATGTGGACCT CAGAGAAGCT GAAGTGTAAAT TGAAAAATGTT
 16851 TCCGATGTGT GGAAGAAATG AAGACTGCTT TGTGTCTGCT GTTGTCTGTA
 16901 GTATTTTCATT AATGTGTGTG TGTGTGTGTG TGTGTGTGTG TGTGTATGTG
 16951 TATGTGTGTA GGAAGAAAG TAATAATGGC TGAGACATCA CCTTCATGTT
 17001 GTTTGCGATT GGGATGGGTG ACTAACACTC CAAGGTAGAG TGAAGGCAGA
 17051 GGAGGAAAC AAGATCACAT TAAATCATCA TCAGTACTGG TTTCTGCCTA
 17101 CAGGAGTTTA CTTTTTTTTT TTTTCCTTTT TTGAGATGGA GTCTCGCTCT
 17151 GTTTTCTAGG CTGAAGTGCA GTGGTGTGAT CTTGGCTCAC TGCAGCCTCT
 17201 GCCTCCTGGG TTCAAGCAGN NNNNNNNNNN NNNNNNNNNN NNNNAGTGAT
 17251 CCACCCGCCT CGGTCTCCCA AAGCACTGGG ATTACAGGCA TGAGCCACCT
 17301 CACGCGGCCA GGATTTTACT TTATAACAAG GAACATATGT TTATCAACCC
 17351 TCTGTTCGTT CCTATACCCC CAGTGGACGA ATGCATGTCT CCTTTTCTCC
 17401 TATATCTCAA TGTTTACATC TCATATCAGT TGGGTATTTT GATAGGAATG
 17451 TCAGCCAGCT ACCTCTGAGG TAACCAAGGG ATTGAAGTTA CTATGGCCAC
 17501 TGCCTATTGG GACCAAAATAT CCCAGCATTT ACCTAACTAA TGCTTGCCCC
 17551 TCACAGACCA GGAAAATTAA AAGAACTCCT AGTCGTGGCC ACCACAACAC
 17601 TTCAAGAAAT TGTGAACAAT CTGACCTAGG GCTTCCTGTC CTCATCCAAT
 17651 TTTACTCTTG GTAGCATGCT AAGAATTTAT CTTTAGTCAT TTCCTCTCCT
 17701 CTTATCCAAT GTCAGGACAT TATGTTGAGG GAGTTCTCTC TTCTAAGTAG
 17751 CAGGGCTGTT AACCAGAGTA TCTTATTTCT TGGCATGGCT AGCATGGTTT
 17801 TCCCTTCATC AGCCACTGTT TGGGACTAAA AGGATTATAT ACTTAATTG
 17851 GGAGAGACTG TATGGACTTG CTTTGAACA GTGGAGAGCT CCTTTCTTCA
 17901 ACCCCAACCTC CCCCATTCCA TTTTTCATGA TGAAGAGACT TAGTTATTGT
 17951 CATATAAAGC TCACCTGCTG TCTTCTAACT ATGTTATTCA AGG

FEATURES:

Gene Structure

FORM 1:

Start: 2001
 Exon: 2001-2335
 Intron: 2336-7242
 Exon: 7243-7511
 Intron: 7512-15247
 Exon: 15248-15990
 Stop: 15991

FORM 2:

Start: 1962
 Exon: 1962-2335
 Intron: 2336-7242
 Exon: 7243-7511
 Intron: 7512-15247

Exon: 15248-15993
Stop: 15991

CHROMOSOME MAP POSITION:
Chromosome 23

ALLELIC VARIANTS (SNPs) :

DNA			
Position	Major	Minor	Domain
2584	G	C	Intron
2655	A	T	Intron
3693	G	A	Intron
3992	G	C	Intron
6285	-	A	Intron
7066	A	T	Intron
14223	-	T G	Intron
16915	-	G T	Beyond ORF (3')

Context:

DNA	
Position	
2584	ATAAACCGCTATCATTATTTATGCATCTAATCCTCTTGGGACCTGTTATCAGGTGAGCAA CTTTTAAATCTTTTCCTTACCCCCCTAACCCACCCAGACTTGGGCAGAGAAAGATGAA AGATTTACAAGATGGATACTATGGCTCTAATCAATTCTCTCATTTCCCTCCCACTCTCGGC TTCCCTGTCTACCATTTCAGAAAACCTTACCTGAAATCTTAAATGCCACCATGATGAACATG TGGTATGTACTTGTGTTCCAAAACAATGAACGATGCTATTTGGGCTGTGTAACTAGAAT [G, C] GGAACAACAAGACGTGATCACCCCTGTGCATGAAGGCCATAGCTGCAGAGTGTGTAATTTT ATTTAAAAAATTTTTTTTCTGAGACAAGGTCTTGCTCTGCCTCCCAGGCTACAGTGCA GTGGTGCGATCATGGCTCACTGCAGCCTTGATCTCCTGGGATCAAGCGAACCTCCCACT CAGCCTCCAAGTAGCTGGGACCAAGGAATGTGTACCATGCCTGGTTAATTAAAAA ATTTTATAGCCGGGTGTGGTGGCTCATGCCTGTAATCCCAGCACTTTGGGAGGCTGAG
2655	TTTCCTTACCCCCCTAACCCACCCAGACTTGGGCAGAGAAAGATGAAAGATTTACAAG ATGGATACTATGGCTCTAATCAATTCTCTCATTTCCCTCCCACTCTCGGCTTCCCTGTCTA CCATTTCAGAAAACCTTACCTGAAATCTTAAATGCCACCATGATGAACATGTGGTATGTACT TGTGTTCCAAAACAATGAACGATGCTATTTGGGCTGTGTAACTAGAATGGGAACAACAA GACGTGATCACCCCTGTGCATGAAGGCCATAGCTGCAGAGTGTGTAATTTTATTTAAAAA [A, T] TTTTTTTTTCTGAGACAAGGTCTTGCTCTGCCTCCCAGGCTACAGTGCAGTGGTGGATC ATGGCTCACTGCAGCCTTGATCTCCTGGGATCAAGCGAACCTCCCACTCAGCCTCCAAG TAGCTGGGACCAAGGAATGTGTACCATGCCTGGTTAATTAAAAAATTTTTATAGG CCGGGTGTGGTGGCTCATGCCTGTAATCCCAGCACTTTGGGAGGCTGAGGCGGTGGATC ACCTGAGGTGAGGAGTTCAAGACCAGCTGGCCAACATGGTGAAACCCCTGTCTCTACTAA
3693	TCTCTGTCGGTTTATCAGTTTCTATTTATCTCTTTGTATATTTCTGCAATAAAGATACG AAGTTGGGAGGGGGCAAAGGAAGGCAGTTCATCTCTATGTGGATGCAGTAGCACAAAT TAATAGTATCAAGTATTTCCATTTCAGATTGCCTTGAAGTGGAAGAATGCACTTAATCCT AGCGAGATAGGCACCTGTGTCAACAGTCTCATCTGGATGCTATGGGGTTTTCAAGGTAGA GAGATGTTGCAAACTTATGAGTTCAGGAGTAAGGAATGGACCAAGTTGTCTTGATTGC [G, A] AGAGAGGCAGACAACCTGCAGTCAGCCGAGGAATATGGGTGAGAGTGTGCAATGGGAAGA TACCTCATCATTTAGACAACATAAAAGTCTGTGAACTAATTAAGGATGGAACCTCACTCT TTATAAAATTTTCATATCTGTACACATGTATAATTTTTATTTGTCACCTTATACCTCAATA GGCCAAAAAATTTTTATCAATAAATTTTTAAGTGGGGAGGAATCGATTAGGCTCTATC AGAGAGAATATGGGATATCAATGGAACAGTGGCCTGAAATTTGGAGTCTAGTCTTCCGC
3992	CGAGAGAGGCAGACAACCTGCAGTCAGCCGAGGAATATGGGTGAGAGTGTGCAATGGGAA GATACCTCATCATTTAGACAACATAAAAGTCTGTGAACTAATTAAGGATGGAACCTCACT CTTTATAAAATTTTCATATCTGTACACATGTATAATTTTTATTTGTCACCTTATACCTCAAT AAGGCCAAAAAATTTTTATCAATAAATTTTTAAGTGGGGAGGAATCGATTAGGCTCTA

FIGURE 3, page 7 of 8

